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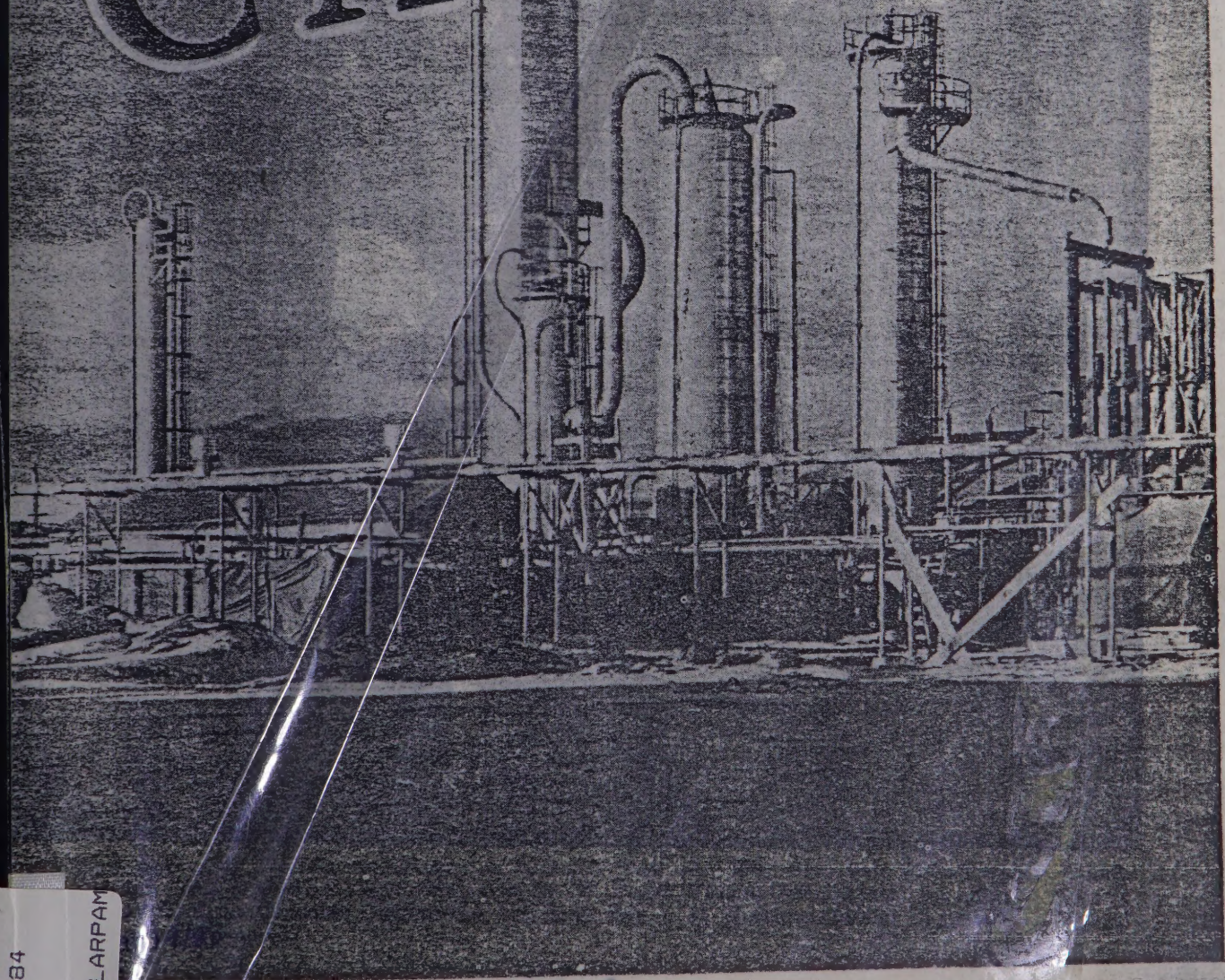
CANOL



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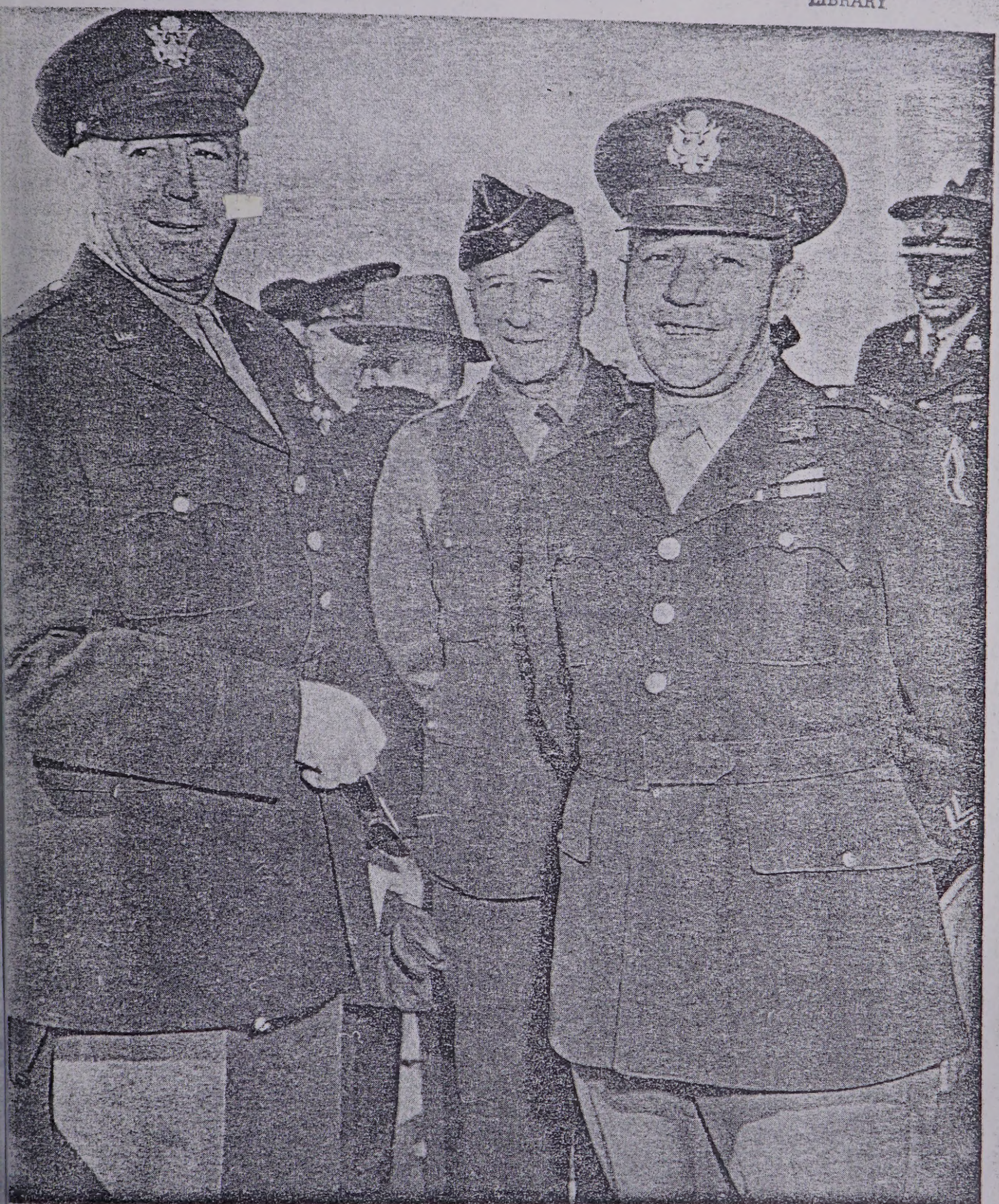

Among those dedicating Whitehorse Refinery on 30 April, 1944, were Brig. Gen. Dale V. Gaffney, Commandneral of Alaskan Wing of USAAF's ATC; Maj. Gen. W. W. Foster, Special Commissioner for Defense Projects thwest Canada from the Canadian Government, and Brig. Gen. L. D. Worsham, former Commanding General Northwest Service Command.

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THIS BOOK IS DEDICATED TO THE PERSEVERANCE AND INGENUITY OF THE MEN WHO MADE THIS PROJECT POSSIBLE.....

AND

....TO THE DEFEAT OF THE "JAPANESE EMPIRE"

THE CANOL PROJECT

The Canol Project, which was conceived in April of 1942 when the Japanese were preparing to take Kiska and Attu and appeared likely to invade Alaska and the Northern Canadian Coast, consists of a construction road 595 miles long from Norman Wells, N.W.T., where a large oil field was developed, to Whitehorse, Y.T., where a refinery was built and from which point a network of distribution pipelines extends into Alaska and Northwestern Canada to supply refined products of the Norman field to traffic on the Alaska Highway and the servicing of the various air fields on the Arctic route.

It is always interesting, as history records great changes, to reflect on the minor incidents which so often turn the course of major events.

There was the original well in the Norman field called "Discovery Well," drilled in 1920 when barges landed a rig near the present site of the pipeline crossing of the Mackenzie River.

OXEN HAULED FIRST RIG TO WELLS

Oxen being used to haul the rig toward the site chosen to drill were exhausted before they could reach the appointed spot, so the driller was forced to start operating at the point where his oxen bogged down.

The well drilled on that haphazardly-chosen spot today is a small producer on the edge of the main field.

If the oxen had been stronger, the well would have been driven at a previously selected site which would have produced a dry hole and quite possibly there would have been no Norman field.

But oil was found and when the pressure of warfare demanded that an inland source of oil be made available that could be protected from the enemy both in production and transportation, the Mackenzie field was chosen.

Civilian construction in the Canol area was started with Bechtel-Price-Callahan as contractors and J. Gordon Turnbull and Sverdrup and Parcel as architect engineers.

CANOL DIVIDED INTO FIVE PARTS

The Canol Project was divided into five parts in order to expedite work on each one.

They were: Canol 1, including the Norman Wells oil field, the crude pipeline from Norman Wells to Whitehorse, and the Canol refinery at Whitehorse; Canol 2, comprised of the gasoline pipeline from Skagway, Alaska, to Whitehorse and tank farms at both points; Canol 3, gasoline line from Carcross to Watson Lake, including pumping and storage facilities; Canol 4, gasoline line from Whitehorse to Fairbanks, including pumping stations and tanks; Canol 5, line from Fairbanks to Tanana which was abandoned; Canol 6, a winter road from Grimshaw, Alberta, to Norman Wells, via Hay River and Fort Norman, for the delivery of supplies during the winter of 1942-43.

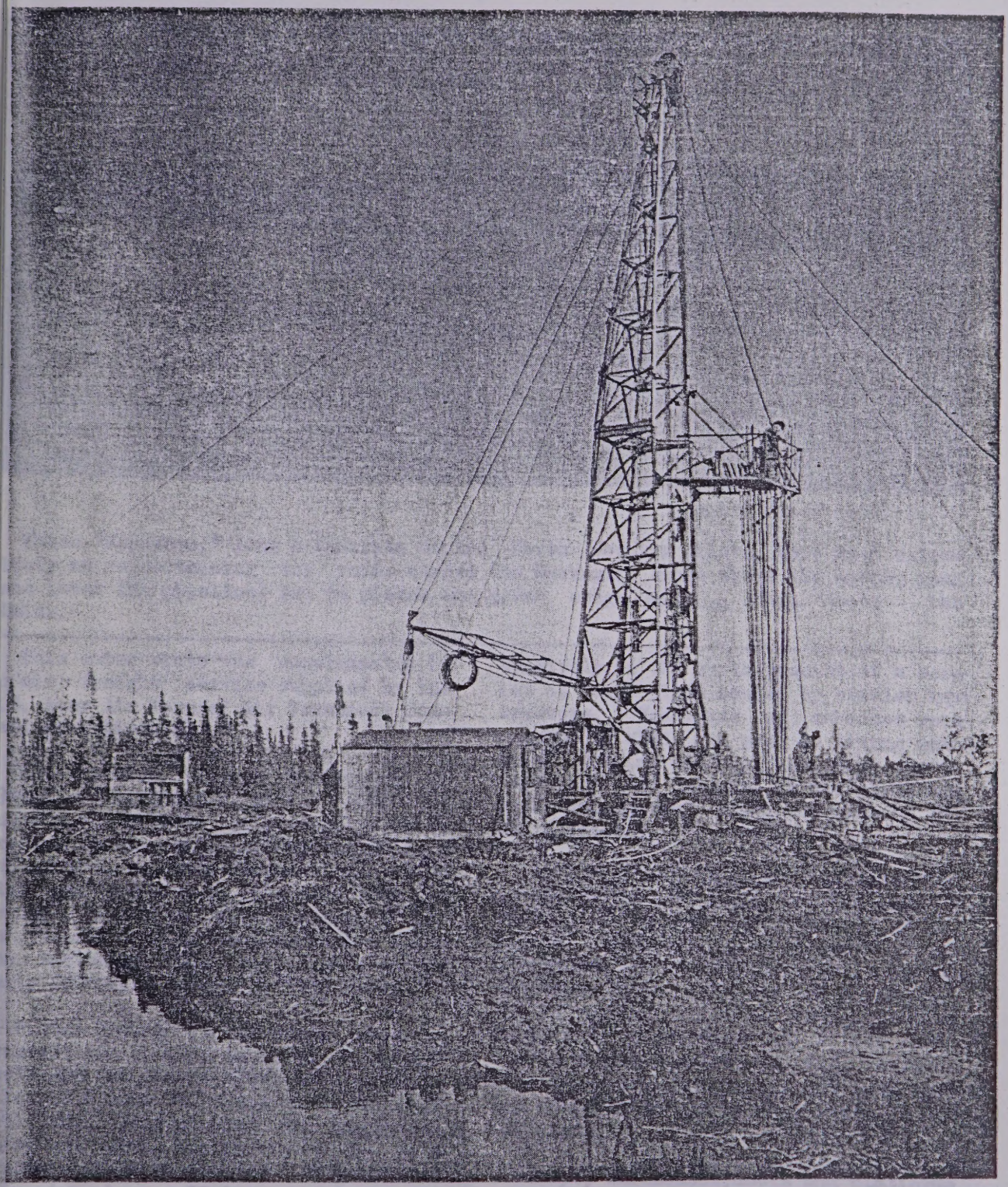
The saga of Canol 6 in itself is one of the most fascinating stories of courage and ingenuity the North has heard in many a year. This road, more than 1,000 miles long, was bulldozed over ice and snow to carry in essential supplies and machinery for the start of operations at the Norman Wells end of the building of the access road toward Whitehorse.

TRANSPORTATION IS BIGGEST OBSTACLE

Transportation of men and equipment to the job proved to be the major obstacle encountered by the U. S. Corps of Engineers. Distances involved were tremendous and existing facilities in the summer of 1942 were negligible.

Before any of the Canol Project could be started, a transportation system had to be set up from Waterways, Alberta Province, more than 1,000 miles down the Mackenzie River Valley toward the Arctic Circle, to carry essential machines, personnel, supplies and equipment to Norman Wells, and the way stations established along the water route.

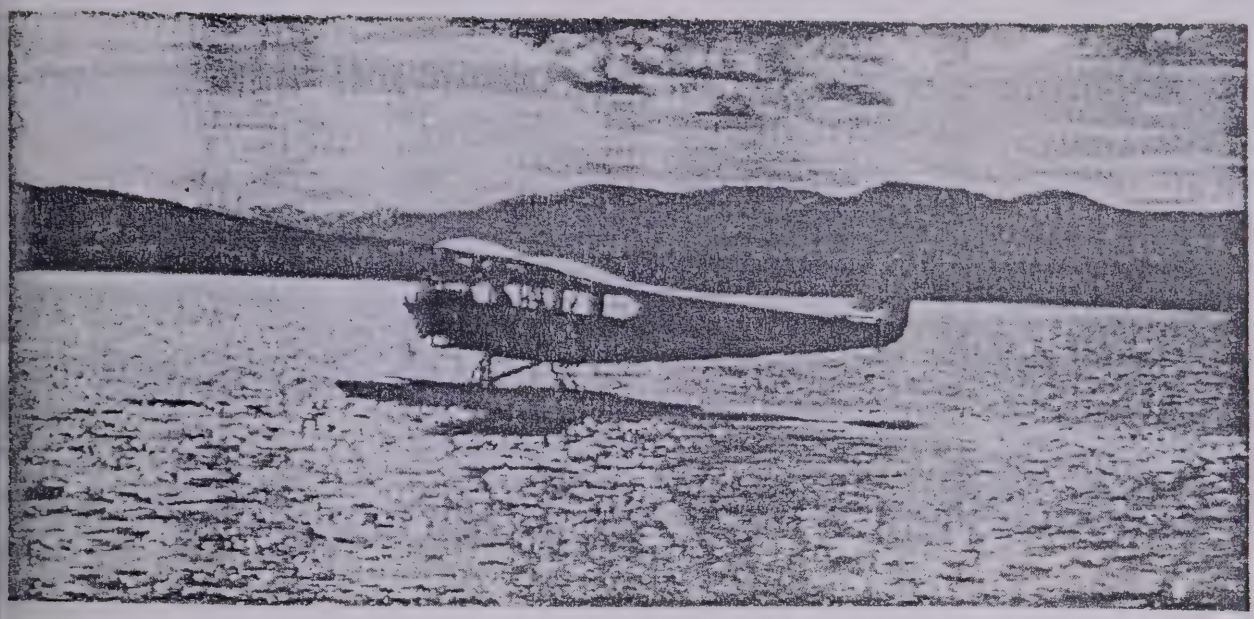
NEW RIGS ARE ERECTED AT NORMAN WELLS TO BRING IN ADDITIONAL OIL FOR WHITEHORSE LINE



The early oil wells drilled in the Fort Norman field were used to supply the needs of trappers and prospectors who made their way that far north on annual treks to Aklavik at the mouth of the Mackenzie with supplies and to collect the furs which had been caught and traded on the vast trapping lines of this great expanse of land.

PHOTOGRAPH BY RICHARD FINNIE

THESE CANADIAN AIRCRAFT WITH THE FAMOUS "BUSH" PILOTS AT THE CONTROLS MADE SURVEYS



PHOTOGRAPH BY RICHARD FINNIE

These "Norsemen," long a favorite of the North Country pilots, were used extensively in ascertaining the route across the Mackenzie Range where the access road (and later the pipeline) had to pierce the great crags hanging high above the plains.

This water route was supplemented by an air freight service supplied by the U.S. Army Air Forces' Air Transport Command from Edmonton.

In addition, during the winter of 1942-43, a 1,000-mile winter road was pushed through by bulldozers so that tractor trains could follow immediately behind them. Other access winter roads also were built into this main line for transportation of other materials that had been caught at various points along the Mackenzie River water route by the early freeze-up in the fall of 1942.

Crews living in cabooses drawn by tractors and mounted on sleds bulldozed their way from Peace River the thousand miles to Norman Wells and on 23 February 1943 this winter road was completed. These men worked during one of the most severe winters on record. Temperatures dropped as low as 72 degrees below zero.

MEN LIVE IN MOBILE WANNIGANS

These cat trains, which were used extensively in the north, consist of a series of large sleds hauled by crawler type tractors. Wannigans or cabooses were mounted on sleds and used as living quarters. Welding and pipe stringing equipment were also mounted on the sleds and were transported along the line as the job proceeded.

On 2 June 1942 Engineer troops arrived at Waterways, a small frontier town at the end of the railroad northeast of Edmonton. Waterways is at the head of the navigation system to Norman Wells on the Mackenzie River. It was the engineers' job to expand existing transportation facilities consisting of a few flat-bottom paddle-wheel boats and several diesel-powered craft which had been used for years to supply trading posts in the far north.

Camps, warehouses, docks and platforms were constructed. Pre-fabricated barges and tugs were assembled. Camp Canol was established on the bank of the Mackenzie River near Norman Wells. Surveys by air and on the ground were started immediate-

"CANOL 446" STURDILY PUSHES ACROSS ATHABASKA LAKE WITH GASOLINE TANKS AHEAD OF HER

This type of craft was pressed into service to assist in hauling material, equipment, supplies and personnel into the far reaches of the Mackenzie to begin the long task of building a road from Norman Wells to Whitehorse before a pipeline could be laid.

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ly to lay out the road and pipeline from Norman Wells to Whitehorse.

Existing facilities could handle about 5,000 tons but before the navigation season closed more than 29,000 tons had been delivered at the job site.

Equipment and supplies moved from Waterways by boat and barge a distance of 1,170 miles before reaching their destination. The route followed the Athabaska Lake and Athabaska and Slave Rivers to Fort Fitzgerald, then over a 16-mile portage to Fort Smith before proceeding down the Slave River to Great Slave Lake and the Mackenzie River.

300-TON BARGES CROSS LONG PORTAGE

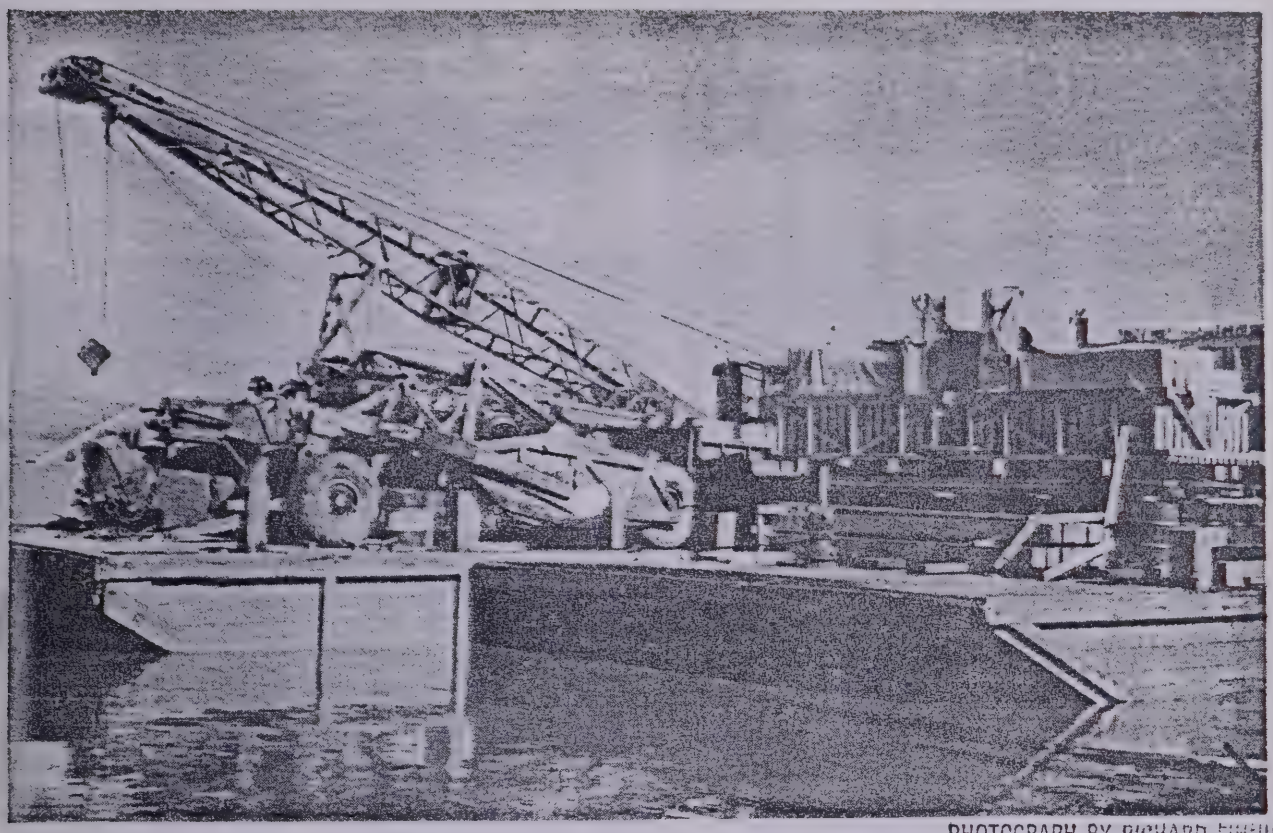
The original portage was practically a trail and had to be enlarged so that 300-ton barges placed on trailers could be hauled by tractors around the rapids in the river.

Great Slave Lake is about the size of Lake Erie and subject to frequent and sudden storms similar to the "Williwaws" that prove so troublesome in the Aleutians. Several barges foundered in such storms but most equipment eventually was recovered as the lake is shallow where they went down.

By the summer of 1943 the water route had been well established. Twenty-three steel barges, 10 diesel tug boats and 118 wooden barges had been constructed at Waterways. Fourteen additional tow boats were secured from private individuals. This was the marine fleet which in the summer of 1943 carried more than 39,000 tons to Norman Wells, a distance twice that from Cairo, Illinois, to New Orleans, Louisiana.

In the meantime another route had opened up from Dawson Creek, B. C., over the Alaska Highway to Whitehorse. The pioneer road was completed 20 November 1942. This road was converted into an all-weather military highway by October of 1943. Long sections of pipe were hauled by this route and trucks with pipe dollies were a familiar sight on

HEAVY CRANES AND SIMILAR CONSTRUCTING MACHINERY WAS MOVED BY WATER FOR 1,600 MILES



PHOTOGRAPH BY RICHARD FINNIE

Many heavy barges had to be constructed at strategic points along the water route and ingenious devices were "dreamed up" to save time and space in transferring material. Each day new problems called on all the native "know how" of the American.

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the highway.

As the various transportation systems began to function and men and equipment began to arrive at the Wells area, crews started from Whitehorse and Norman Wells on the construction of the Canol access road. All during the severe winter of 1942, using dog teams, snowshoes, or tractor trains, work continued at both ends of the line.

ROUTE SOUGHT FOR ACCESS ROAD

Camps were built. Exploring parties set out to determine a feasible route. Only a few Indians had ever been through the country and these were utilized as guides. These exploring parties often ran short of food and had to exist on what game they could find. Temperatures ranged from 30 to 72 degrees below zero for weeks. It was the coldest winter on record in the Northwest.

The road had to be built to enable trucks hauling pipe to reach the welding crews. It was the same old transportation problem all over again.

On 31 December 1943 the Canol road was completed and on 16 February 1944 the final weld was made in the 595-mile pipe line.

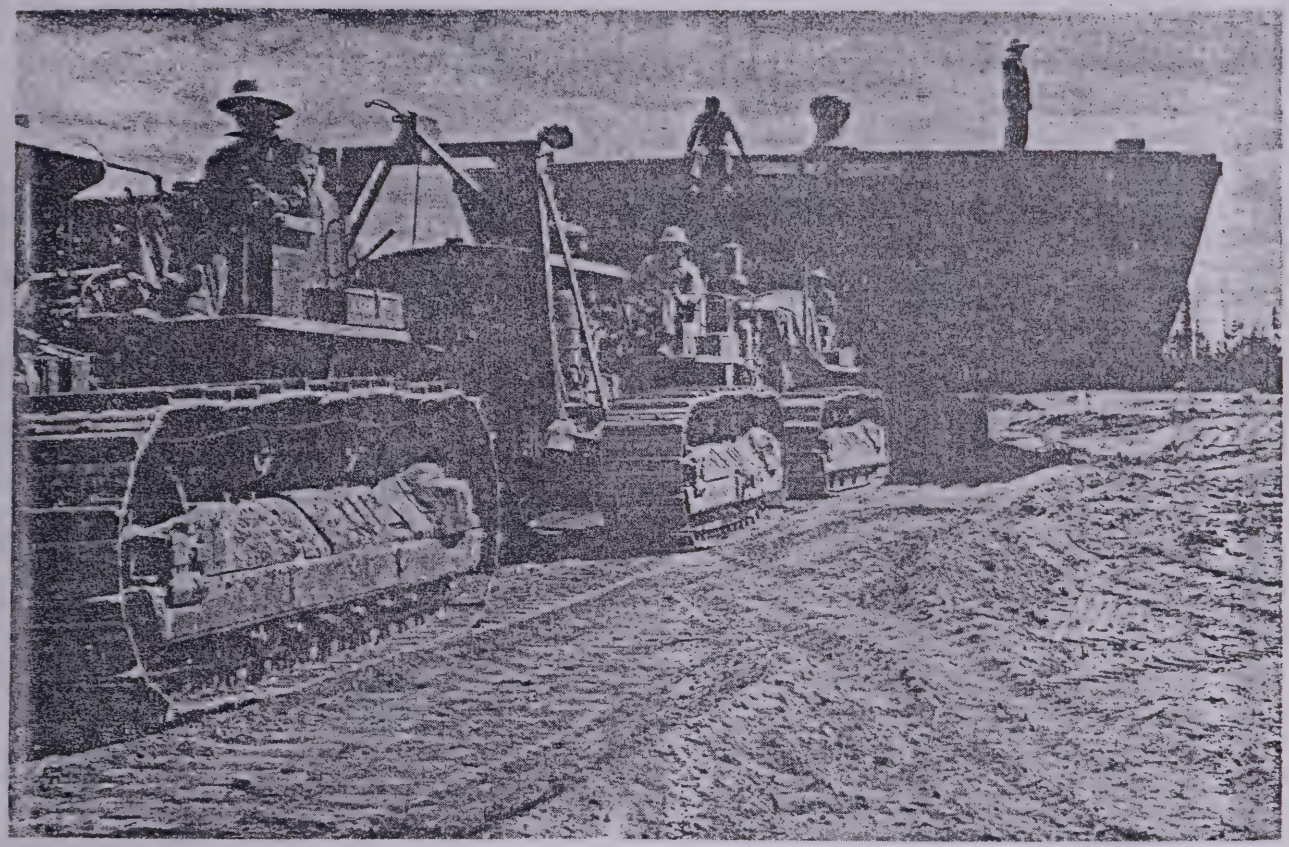
The crews working from the east and west met in Macmillan Pass on the Continental Divide deep in the Mackenzie Mountain range in the heart of virtually unexplored country.

To ship supplies to the Whitehorse end of the project, freight was routed by barge to Skagway, Alaska, and over the White Pass & Yukon narrow-gauge rail road to Whitehorse.

The White Pass & Yukon Railroad winds over White Pass, climbing 2,900 feet in

PHOTOGRAPH BY RICHARD FINNIE

THREE HEAVY DUTY CATERPILLARS PULL A 120-TON BARGE ACROSS THE 16-MILE LONG PORTAGE



The dusty roadways of the old portage routes from Fitzgerald to Fort Smith were enlarged and straightened by Corps of Engineer troops as the pressure of increased traffic around the precipitous falls became greater in development of Canol.

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18 miles. The White Pass was one of the trails used in the gold rush days of '98 by prospectors bent on getting to the gold fields near Dawson City, Yukon Territory.

RAILROAD LEASED BY U. S. ARMY

In the last few years, the railroad ran only in the summer months and was primarily used as a scenic route and tourist attraction. The capacity was very limited -- about 5,000 tons per month. The Army Engineers leased the railroad and the 770th Railway Operating Battalion started operating the line, increasing its tonnage to a peak of 46,000 tons per month by August of 1943.

In the meantime, at Norman Wells work had been progressing. Wells had been drilled to produce 3,000 barrels a day. Exploration had discovered an oil field much larger than expected. It has been estimated by geologists to have a potential of from 50,000,000 to 100,000,000 barrels or more.

The oil is of such consistency that it will flow at temperatures of 40 below and the pipeline was laid on top of the ground to eliminate the installation of expansion joints and also to prevent breakage in the line caused by "Frost heave." Pumping station crews tested the line and on 16 April 1944 the first crude arrived at the refinery at Whitehorse. On 30 April actual operation of the refinery was started.

A Northern Alberta Railway line runs from Edmonton to Waterways on a northeasterly route, a distance of 304-9/10 miles.

At Waterways there was a tiny settlement accustomed to handling freight and some passengers in the summertime who

ised the Hudson's Bay Company stern-wheel paddle-boat and Northern Transportation Company craft which plied between Waterways and Fort Fitzgerald 287 miles north, where a precipitate drop prevented further navigation.

FEW CRAFT MAKE ANNUAL VOYAGES

On the other side of the Fort Fitzgerald portage a few other craft, similar to the ones on the Waterways side of the portage, made some trips each summer between Fort Smith and Norman Wells.

On this slender transportation route, which had never carried more than enough freight to service the trappers, prospectors and a few settlers in the Mackenzie River Valley, was to depend the opening up of a wilderness route from Norman Wells to Whitehorse.

All such transportation facilities were leased by Task Force 2600, the total of which were inadequate to handle more than 5,000 tons of freight annually.

Heavy machinery, thousands of men, supplies and equipment for them, housing -- in fact everything for the development of the construction road between the Wells and Whitehorse -- had to be transported into the area.

The oil fields are 51 miles north of Fort Norman, a few miles south of the Arctic Circle, and 1,171 miles north of the railhead at Waterways, via the Mackenzie River route.

During the summer of 1942 Task Force 600 was scattered from Edmonton to Waterways to Fitzgerald to Fort Smith to Norman Wells.

TASK FORCE STARTS TO BUILD TRANSPORTS

In all the 527,490 square miles of the Mackenzie District there were fewer than 5,000 residents at the time Task Force 2600 started developing the transportation line from Whitehorse to Norman Wells.

Of this population, 800 were white, with about 2900 Indians and the balance Eskimos.

A survey showed that construction of airports for land planes, and improvement of landing surfaces on lakes and rivers for planes on pontons, would be essential to expedite building of the Canol Project construction road.

Docks were built at Waterways, at Fitzgerald and at many other way stations which were established along the water route.

Supplies caught by the early and severe freeze-up in the fall of 1942 at these way stations were hauled by tractor trains into Norman Wells over routes which often were charted for the first time by the lead 'cat driver.

The portage roads between Fort Smith and Fitzgerald were unable to handle the traffic even that first summer, so the Engineers leased the roads and rebuilt them.

BARGES LOADED WITH SPECIAL CRATES

A system was devised where barges were built and loaded with specially crated equipment and supplies at Waterways, hauled by tugboat to Fitzgerald where the barges were detached from the tugboat and hauled across the portage by heavy caterpillar machines and launched again to be picked up off Fort Smith by other tugboats and paddle-wheel steamers.

On 2 April 1943, Brigadier General Ludson D. Worsham took over command as Northwest Division Engineer which included Task Force 2600, and utilizing this system of transportation for men and supplies, transported thousands of civilian construction employees into the Wells area where the construction road slowly was being pushed westward toward the crags of Dodo Canyon.

Meantime, the Alaska Highway had been utilized during the early spring to bring in supplies and equipment for the construction crews which started eastward toward Dodo Canyon from a point on the Alaska Highway about 100 miles south of Whitehorse.

During the summer, both of these transportation systems were successfully

"MORE DAMN PIPE" BEING HANDLED BY CORPS OF ENGINEER TROOPS ALONG CANOL ROUTE

PHOTOGRAPH BY RICHARD FINNIE

Thousands of sections of pipe were moved by tractor train, barge, truck dolly and any means at hand during the scramble to get all needed supplies to the job-site in the summer of 1943.

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used to carry in the men and supplies which culminated in a very informal waving of the hands between two "cat" drivers high in the Mackenzie range in the winter of 1943-44, when the access road was completed.

Representing the Canadian Government at the ceremony dedicating the refinery at Whitehorse on 30 April 1944, Major General W. W. Foster, Special Commissioner for Defense Projects in Northwest Canada for the Canadian Government, said in a message from The Right Honorable W. L. Mackenzie King, Prime Minister of Canada:

"I am grateful to Brigadier General

Worsham for his invitation to attend these opening ceremonies and regret that pressure of public business prevented me from being present.

"The Canol Project was undertaken as an emergency measure when enemy action threatened the lines of supply to United States forces in Alaska.

"The History of our two countries has been marked by many great engineering achievements. Canol will now be included among the most arduous of these great projects. With skill and determination, you have won through in a manner that recalls the feats of the early pioneers of this Continent.

"Canol stands as one more example of United States-Canadian cooperation. It has advanced by many years the time when the oil resources of the Canadian Northwest will be available to meet evergrowing needs."

General Worsham, of Evansville, Indiana, was Northwest Division Engineer directly in charge of construction of the Canol Project, with Brigadier General James A. O'Connor, as Commanding General of the Northwest Service Command. Later General Worsham succeeded General O'Connor as Commanding General of the Northwest Service Command. Colonel F. S. Strong, Jr., now is the Commanding Officer of the Northwest Service Command.

FIRST TROOPS BEGIN TO ARRIVE

Task Force 2600 was created to build the Canol Project by Corps of Engineers soldiers, and Colonel Theodore Wyman, Jr., who was appointed commander of the force, arrived in Edmonton, Alberta, Canada to establish headquarters on 18 May 1942.

Troops, passing through Edmonton, reached Waterways 2 June 1942, the nucleus of Task Force 2600.

Until the troops, consisting of a general service Engineer regiment with Negro enlisted personnel, two heavy ponton battalions, and supporting units, such as station hospitals and quartermaster detachments, could establish a transportation system the constructors could not start work on the pipeline.

PONTON BATTALIONS ARRIVE

Between 2 June and 15 June the 89th and 90th Heavy Ponton Battalions, the 388th Engineer Regiment (a battalion when assigned to the force and expanded to a general service regiment during the project), the 44th, 45th, and 46th Station Hospitals, Quartermaster Detachment, two finance detachments, 838th Signal Service Company, force surgeon, and Headquarters and Headquarters Detachment, all arrived at Waterways. A tent camp was set up and given the name of Camp Prairie, about half a mile from Waterways.

ALL PARTS OF FREIGHT LINE BUILT

Meanwhile, between 35 and 70 carloads of freight were arriving daily at Waterways, consigned to the project. There were no warehouses, no storage facilities and the cars must be unloaded at once, both because of the scarcity of cars and because of lack of rail trackage.

Soldiers worked twenty hours a day, piling goods on rude board platforms, protecting sugar, food supplies, and clothing, as far as possible, with tarpaulins stripped from trucks. It rained incessantly during the first days.

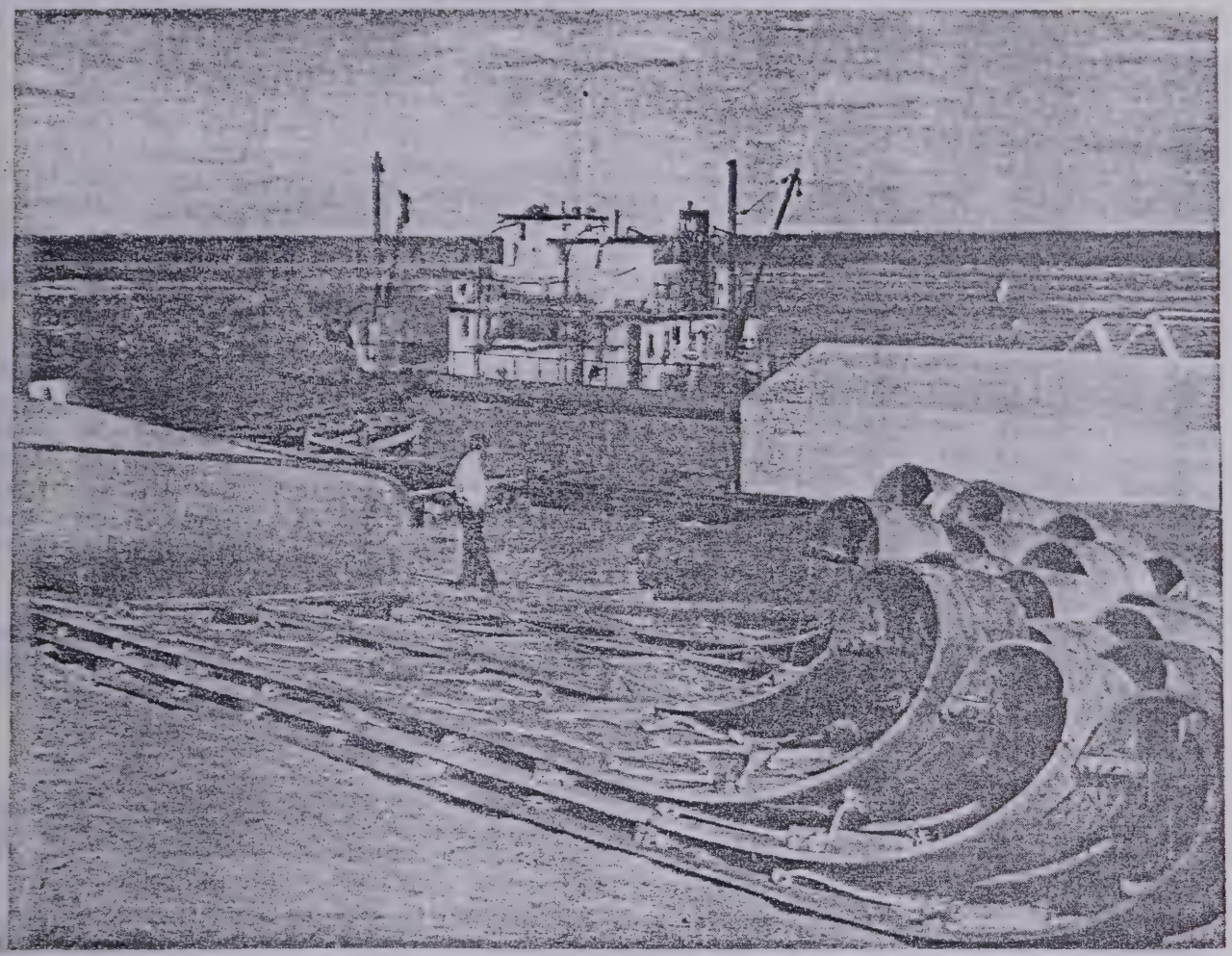
The heavy ponton battalions immediately began constructing docks and piers in the Athabaska River and the Clearwater River, the latter joining the Athabaska near Waterways and Fort McMurray, an old Hudson's Bay Company trading post four miles from Waterways.

The ponton battalions also constructed rafts by lashing pontons together to be used for transporting freight north down the rivers.

On 6 June the first ponton barge, loaded with cranes, was completed by men of the 89th Battalion and sent out from Waterways, pushed by a utility power boat.

The barge was heavily loaded, leaving a comparatively small freeboard. For 150 miles of winding river travel the

MANY KINDS OF TRANSPORTATION UTILIZED IN MOVING ESSENTIAL FREIGHT TO FORT NORMAN



Toboggans drawn by dogs with loads up to 300 pounds in some cases were used to reach isolated units working on the Canol Project's many far-flung transportation lines.

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barge met little trouble, except that Indian guides occasionally were at a loss to find the proper channel.

FIRST PONTON CRAFT FOUNDERS ON LAKE

A little more than 150 miles from Waterways the tow entered a broad expanse of water, Athabaska Lake, where waves were being pushed two feet high by a strong wind.

The barge traversed only a short part of the necessary distance before waves filled the pontons with water and then foundered. Fortunately the water was shallow, less than five feet deep. The men reached shore easily, leaving the gloomy bulk of a power crane sticking up above the water like a landmark.

A day later a second ponton barge met a similar fate in almost the same spot. Thereafter pontons were decked over, at first with canvas, later with boards, and similar mishaps became rare, even though storms often raised waves three feet high upon the lake.

A third ponton barge, also constructed by the 89th Heavy Ponton Battalion, passed the lake safely and reached Fort Chipewyan, 187 miles north of Waterways, in safety. Loaded with equipment, it proceeded down the Slave River to Fitzgerald, last hamlet in Alberta, arriving

there about 11 p.m. on 12 June.

At that time of year only a short period of darkness after midnight interrupts travel on the rivers. Full advantage of the long days was being taken at Waterways.

Six times the previous annual volume of freight was transported during the summer of 1942, including barges 150 feet long and 120 tons in weight.

NAVIGATION OPEN 305 MILES TO FORT SMITH

The transportation system was open 303 miles, to Fort Smith. Past that point, navigation would not begin until Great Slave Lake should be free of ice. While the ice was breaking up in June, great masses of it still floated on the huge lake and were driven by strong winds across the channel boats must take.

Meanwhile, at Waterways, additions were being made to the transportation equipment. A crew of civilian boat builders from the Kansas City U.S.E.D. district was constructing wooden barges.

The job was divided into four zones: Base Zone, with headquarters at camp Prairie; Portage Zone, with headquarters at Fort Smith; Mackenzie Zone, with headquarters at Fort Simpson, and the Norman Wells Zone, with headquarters at Norman Wells. Each zone was charged with responsibility for transportation of freight within its limits.

The first troops moved north from Fort Smith on 3 July 1942. They were the men of Company D, 388th Regiment, and all the enlisted men were Negroes. The soldiers traveled aboard the Hudson's Bay boat, Distributor, to Resolution, 307 miles from Waterways, near which Slave River enters Great Slave Lake.

100 MILES OF OPEN WATER MUST BE PASSED

Craft must pass 100 miles of open water across the lake from Resolution to Grigley Harbor, where the Mackenzie River has its source in the lake. The Distributor about midway of the passage, was forced to seek shelter near shore when storms arose. Further travel was un fe for three days and the soldiers were put ashore for exercise.

Non-commissioned officers lined the men up for calisthenics, unaware that an Indian, hidden in the scanty spruce undergrowth, was watching. These were the first American soldiers ever to penetrate that country and the Indian came to the conclusion that they were performing a war dance.

He carried the news to his tribe and Captain Robert Jackson, commanding Company D, was visited by an Indian chief who ceremoniously requested that the strange soldiers repeat their war dance so the tribe could see it. The amused captain acceded to the demand and during the three days' stay soldiers and Indians entertained each other.

The company arrived at Norman Wells on 13 July. Imperial Oil Company had a crew of more than 60 men at work on a new oil well drilling campaign, having started a well 4 July, using rigs sent north by a boat leaving Fort Smith before the troops arrived there.

Otherwise, at Norman Wells there was practically nothing.

The soldiers began construction of a camp, Camp Canol, preparing for themselves and for civilian workers who would be sent north by the contractors. The Mackenzie River transportation system was open and in operation from Waterways to Norman Wells, 1,171 miles. The wells are about 60 miles south of the Arctic Circle.

The mileage alone gives little idea of the difficulties. Maps do not show graphically the vast areas of small pools, small lakes, and deep muskeg, which are all that is to be seen from Fort Smith "down north."

POLAR ICE CAP GAUGED AT 90 FEET

The polar ice cap at Norman Wells was found to be 90 feet thick.

When the project opened, the Northern Alberta Railroad operated one train a week over the 300 miles of railroad from

HARDSHIPS WERE BORNE WITH CHEERFUL INDIFFERENCE BY WORKERS ON THE CANOL PROJECT

PHOTOGRAPH BY RICHARD FINNIE

Living in "wannigans," many hundreds of civilian employes of U. S. and Canadian contractors moved their homes from day to day, eating from a "chuck" wagon often in 'way-below zero temperatures.

Edmonton to Waterways. Project needs demanded more extensive service and the railroad rolling stock was all utilized.

Troops built spur tracks at Waterways to warehouses put up by the contractors, and assisted the construction in all ways possible. The men worked shifts practically around the clock and Sunday, for them, was just another work day. Officers shared the long hours and labor with their men.

Great numbers of vehicles, jeeps, trucks, carryalls, and road building equipment arrived. Thousands of tons of pipe were unloaded from railroad cars and loaded on barges, by hand at first,

although a few cranes later were put in use at Waterways in 1942 and at Fitzgerald in 1943.

It was hard manual labor. Engineer soldiers were used for many types of work. Some cut firewood for the wood-burning Hudson's Bay steamboats. The craft used more than a cord of wood an hour and thousands of cords were cut and stacked, both at Waterways and at Fitzgerald.

NEGRO SOLDIERS LEARN NORTH COUNTRY

It was a strange northland setting for the Negro soldiers, nearly all of whom were from the "Deep South." The country around Fitzgerald is low and flat, with stunted spruce, pine, and aspen poplar dotting the muskeg.

It is a favorite breeding place for mosquitoes and for the first weeks the soldiers were not protected by mosquito nets. They labored through long hours under persistent persecution by the insects while natives, well protected, stolidly watched.

Nothing could quite overcome the natural gaiety and love of song inherent in the Negro soldiers. They had several favorite songs which they sang as they wrestled with the heavy steel pipe.

One was "Biscuits in the morning, biscuits at night, here comes the Athabaska with another load of pipe."

Another was "Crackers in the morning, crackers at night, here comes the Athabaska with more damned pipe."

FAVORITE LINES HIT AT MOSQUITOES

A third favorite was "the night is light, mosquitoes sho' do bite, look up de river and see mo' damn pipe."

The work made rapid progress, however. Squads developed considerable rivalry to see which could handle most pipe in the shortest time, and the Fitzgerald end of the portage was cleared of freight about as rapidly as it arrived.

In July it appeared that the mosquitoes were about to retire from the battle. The rejoicing was short lived, for the "bull dog" flies took their place, a change which was not for the better.

The soldiers said it was a case of "Mosquitoes: At Ease; Bull Dogs: Take over."

In the meantime, project activity had had a considerable effect upon Edmonton, Alberta. Bechtel-Price-Callahan opened a large office there on 8 June, at first staffed by 22 employes sent from San Francisco, California, where a rear echelon was maintained throughout the program. Because of the immense amount of office work, the force was rapidly increased and in July the firm had 570 employes in Canada, more than half of whom worked in or near Edmonton.

Task Force 2600 maintained a headquarters in the city also and men passing through en route to the project were occasionally quartered there for some time. By mid-August several thousand Americans, partly transients, were in Edmonton and housing became a problem.

AMERICANS POUR INTO CANOL PROJECTS

The number included Bechtel-Price-Callahan employes scheduled for the Canol 2 project, which began operations upon the Alaska Highway. A steady increase in the American influx continued until early in 1944.

Another pipeline project, Canol 3, was added to the Canol Project on 20 September 1942 when Bechtel-Price—Callahan entered into a supplemental agreement to construct a pipeline from Carcross, intersecting the Skagway—Whitehorse line, to Watson Lake, Y. T. This line would supply the Watson Lake airport with fuel. It is a 2-inch line 245 miles long.

And so a great transportation system was set up along the great rivers and lakes explored by Alexander Mackenzie in 1789. It was almost the first radical change in transportation methods there, except for innovation of steamboats and a few power boats, since Mackenzie, a

PHOTOGRAPH BY RICHARD FINNIE

CAT TRAINS OFTEN FOLLOWED ON HEELS OF BULLDOZERS AS WINTER ROAD WAS BEING BUILT

Construction of the access road through the Mackenzie Mountains was a tough job that had to be bulldozed through to clear the way for building the Canol pipeline.

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factor for the Hudson's Bay Company's great rival, the Northwest Company, had given his name to the mighty stream.

That stream had remained uncharted and almost unexplored. The Northwest Company in 1811 had established the little far northern post, Fort Norman, 50 miles south of the present site of Norman Wells. Following the acquisition of the trading company in 1821 by the company of Adventurers of England trading into the Hudson's Bay Country (chartered 2 May, 1670) the Hudson's Bay traders had held almost undisputed sway over the Northwest until gold rush days and discovery of valuable minerals or metals around Great Bear Lake and Great Slave had brought a few hundred people into the area.

CONTRACTORS REPLACE SOLDIERS ON PROJECT

The Canol Project soon was to far outgrow Task Force 2600.

The contractors, supervised by the architect-engineer and the U.S.E.D., were responsible for pipeline and road construction and performed the work, with assistance given by troops where possible.

The later phases of the project, where civilians did a major part of the work, were a reversal of the first summer, where the burden was borne by the approximately 2,500 soldiers of Task Force 2600.

At Norman Wells drilling continued with winterized rigs, and the Noble Drilling Company of Tulsa, Oklahoma, was engaged to sink wildcat tests in areas near the proved field. Little was accomplished during the winter months, however.

The spring of 1943 found all the Canol projects well under way.

Navigation on the Mackenzie system was begun 19 May, when the first boat steamed down north from Waterways. The experience of the previous season had hardened the troops and the transportation system functioned smoothly and with out hitch.

Thousands of tons of freight were transported to both Norman Wells and Whitehorse, as full advantage was taken of the summer working season. A tractor train during the late winter had blazed part of the trail west from Camp Canol and the route was followed by the access road, along which the pipeline and telephone line were constructed.

ACCESS ROAD IS BEING MAINTAINED

A new firm, Marine Operators, was formed to take over the responsibility of Mackenzie system navigation on the basis set up by the task force and in July of 1943 the task force, its mission accomplished, began to dissolve. The last of its troops moved out or were assigned to semi-permanent posts in the Service Command area by 1 October 1943.

Meantime, access roads and pipelines were being driven toward a central meeting place by the thousands of contractors' civilian employes.

Today the Canol Project is a completed part of the war pattern and is ready to be utilized as the Allied Command may need in these times when our armies are on the march all over the globe.

Maintenance is being continued on the access road so that supplies can be moved in to the pumping stations and patrols can inspect the pipeline and effect repairs when needed.

CONTRACTORS

Contractors employed on the Canol Project included: Bechtel-Price-Callahan of San Francisco, Calif.; J.Gordon Turnbull & Sverdrup & Parcel of Cleveland, Ohio, and Kansas City, Mo.; Standard Oil of California and Imperial Oil, Ltd., of Canada; Horton Steel Co., Ltd., of Toronto, Ont.; British Columbia Bridge & Dredging Company of Vancouver, B. C.; Butler-Hawkins Contracting Company, Ltd., of Edmonton, Alberta; Chandler Drilling Company of Calgary, Alberta; Coast Construction Company of Vancouver; E. W. Elliott Construction Company of Seattle, Wash.; Marine Operators of Edmonton; Metcalfe, Hamilton & Kansas City Bridge Company of Kansas City; Miller Construction Company of Indianapolis,Ind.; Noble Drilling Company of Tulsa, Okla.

CONGRATULATIONS

To these contractors and their hardy civilian employes goes the credit for completing the Canol Project after the transportation system was put into operation by the Corps of Engineers.

To these adventurers who left their homes and their families for as much as a year at a time to brave Arctic blasts, there was a keen satisfaction in actually getting into this show which seemed to bring them to closer grips with Tojo's boys, or did we say boys? Most of the original stringers and catskinners have returned to tell their tall tales.

PHOTOGRAPH BY RICHARD FINNIE

FINAL WELD UNCEREMONIOUSLY MADE IN · CANOL PIPELINE AS HARDY EMPLOYES LOOK ON PROUDLY

CANOL ROAD HELD FIRMLY THROUGH SCENIC AREAS UNSURPASSED ON NORTH AMERICAN CONTINENT

PHOTOGRAPH BY RICHARD FINNIE

USAAF'S AIR TRANSPORT COMMAND PLAYS BIG ROLE IN NORTH COUNTRY

In the spring of 1943, U. S. Army Air Transport Command was called on to transport hundreds of civilian workers to points in the Alaska Highway area and later in the same year when a call for speed was made for the Canol Project ATC again swung into action to transport employes, supplies and machinery to vital centers in the Mackenzie River area.

The civilian employes were drawing pay while en route to both areas and it was desired to have them reach their jobs as quickly as possible. It took about 10 hours to fly these employes to the furthermost outpost of the Alaska Highway.

The alternative would have been to send them by steamship from Seattle to Valdez, Alaska, thence by motor truck over the Richardson Highway -- a 40 to 60 day trip -- to their destination.

In the Canol area there literally was no means at times of delivering these men to their jobs except by air.

In June and July of last year, ATC sometimes flew as many as 100 new workers per day into Norman Wells to join the Canol Project. Their tools were flown along with them, no mean item because it was not unusual for a man's toolbox to weigh 150 pounds. It took about seven hours for a C-47 Skytrain to take a load up to Norman Wells. By barge, the men would have been on the way six weeks.

With their task completed, these workers were flown out beginning last March 15, Canadian Pacific Air Lines joining with the Alaskan Wing in bringing them out.

You may encounter a load of potatoes as well as a load of people along the ATC airways of the North, for the men who keep 'em flying are pretty good eaters. Much food bought in Edmonton has been flown to remote air bases in Canada where diet vies in importance with mail from home. Two tons of potatoes bagged in 100-pound sacks fit snugly into a Skytrain, with room to spare.

Old-time pilots who had never flown anything but passengers, mail and light air express, have shaken their heads at the things they found loaded on their aircraft. Items included structural steel for buildings, gasoline storage tanks, construction equipment for bridges and coal for use in blacksmith forges.

At one critical time, the hospital at an Alaskan outpost burned down and 24 hours after word was received in the United States complete new equipment was en route from St. Louis by air, and was delivered before another 24 hours had elapsed.

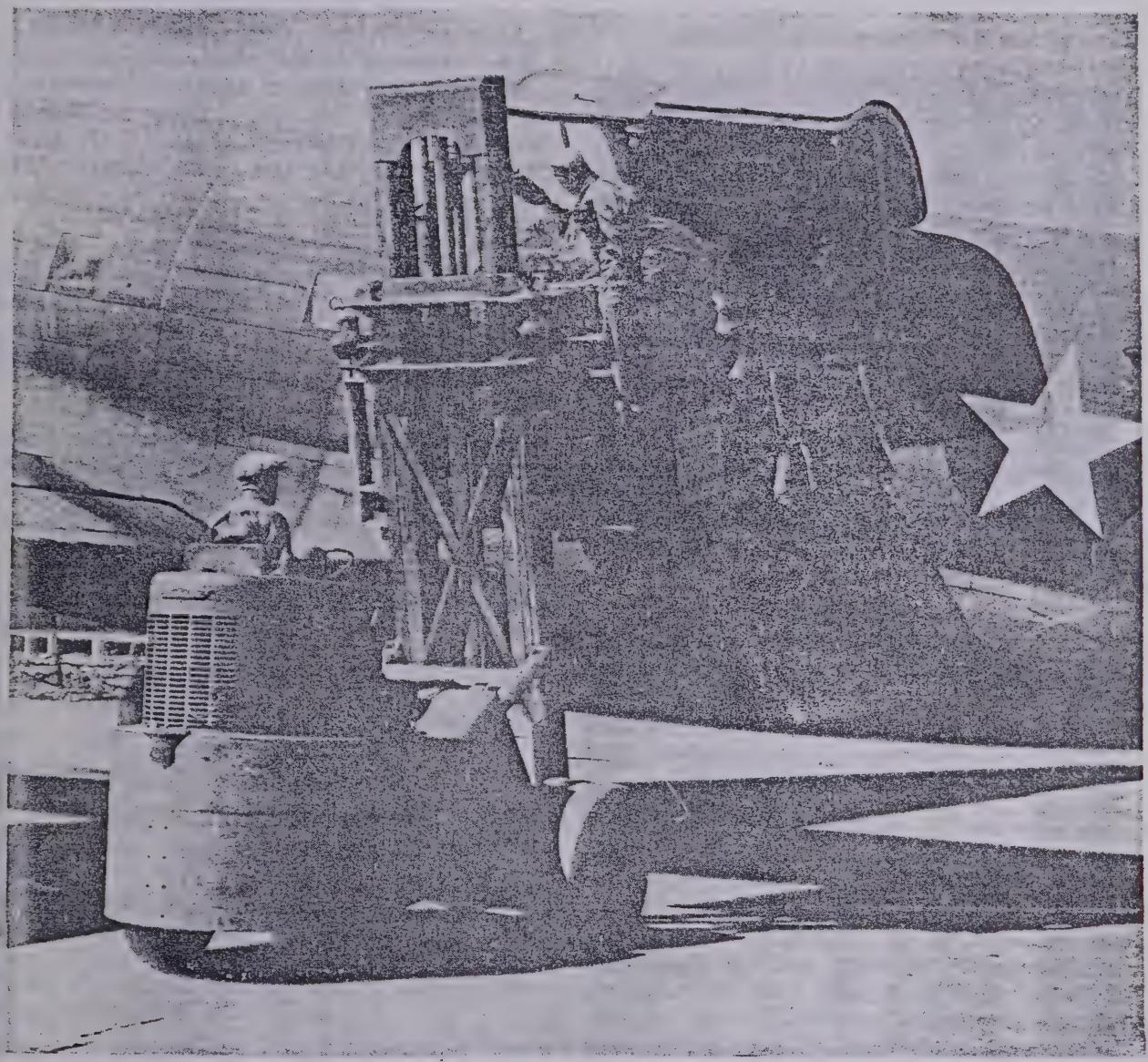
Once a gasoline truck had to be transported to a point which could not be reached by road. The truck was dismantled but still would not fit into the cabin of an airplane. There was only one answer, the chassis of the truck was cut in two and the two parts flown in separately, after which they were welded together and the truck reassembled.

A similar operation had to be performed on a caterpillar tractor bulldozer, which was needed to prepare a flight strip in a remote spot. Bags of cement three tons at a time, were flown from Fort St. John to Fort Nelson to lay a concrete parking strip at a point where no other material would serve the purpose.

When water navigation was suddenly stopped by an early freeze-up, ATC was called upon to take over the transport of supplies for the Canol pipeline project. This involved flying in temperatures as low as 72 below zero. Men who loaded the planes and tied down the cargo froze their fingers. Heating systems in the aircraft failed and pilots, although warmly clothed, suffered extreme hardships. Mechanics had to service aircraft in the open without protection from the cold winds.

All the above conditions existed at a time when ATC had at least three loads of cargo and passengers for every plane available and, as a result, a strict priority system was established.

CARGO IS LOADED ABOARD A SKYTRAIN AT EDMONTON FOR DELIVERY TO MANY NORTHERN POINTS



Hoisting cargo aboard a C-46 Skytrain of the Alaskan Wing, Air Transport Command, became an old story early in 1943 with the increasing demands for immediate shipment on the Canol Project. These airplanes are the largest of the two-motor transports, and can carry a 5-ton payload on a 1,000-mile flight.

Combat materiel was necessarily given top priority, followed closely by the construction projects which would eventually relieve some of the strain upon the air transport facilities, Brig. Gen. Dale V. Gaffney, Commanding General of the Alaskan Wing, ATC, said recently.

The opening of the Alaska Military Highway resulted in diversion of the less critically needed items to surface transportation consisting of trucks and "dollies" for the pipe being hauled.

Each passenger and each pound of cargo flown had to be assigned an established priority, and priority was issued only when it was definitely proven that the transportation was essential to the successful prosecution of the war, and that no other means of travel or shipment would suffice.

EXPLORER FINDS TRAIL THROUGH MACKENZIE MOUNTAIN RANGE

On 25 October, 1942, Guy H. Blanchet, former Canadian Government surveyor and 60-year-old veteran of many north trails, started a trek through the Mackenzie Range to find a route for the access road along which the pipeline would be laid.

After crossing the Carcajou, Blanchet's diary records vividly some of the hardships in establishing a route through this range where only a few Indians had knowledge of the passes and landmarks.

"Paul and I cut trail. This climbs the bench above the river and heads up the slopes at steep grades. Timber very thick making work slow. Lost and found barometer," the diary reads.

"After lunch trail became mountainous passing East and South of Sheep's Nest which was lost in mist.

"We camped at a clump of dwarf trees which Paul said were the last. Made open camp, clear bright night with the mountain rising behind us....

"The river drops steadily and enters the canyon with almost vertical walls hundreds of feet high. The river is so small that a road can be built on its bed. Scenery wildly grand. A few miles down Paul saw a ram on a rock slide. Fired six shots and got it. Hard climb then packed the meat down.....

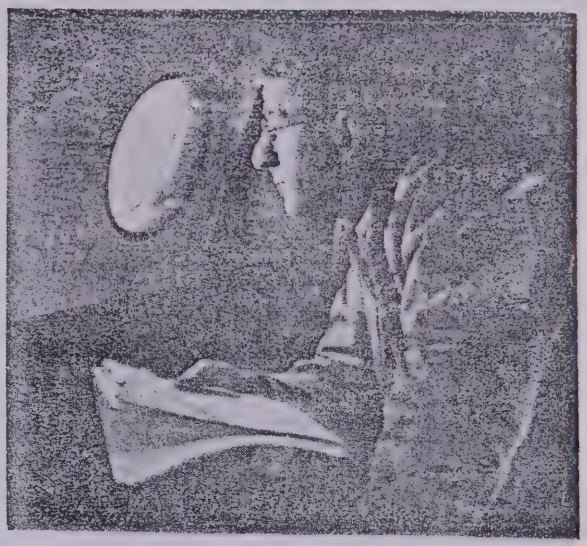
"I drove Edward's (Edward and Fred were two of the Indian guides accompanying Mr. Blanchet) dogs and sprained a foot between toboggan and a boulder....

"I made a splint for my foot. Had to climb above a cliff then back to river - better going - two fair streams from south. The river swings northward about a mountain. Passed an open "hot spring." Fred pointed to what he said was a better road by the Fox Plains which avoided some bad river. Joined our road farther up. I left a note there."

Mr. Blanchet left a note because he was running short of food and was worried about "too many men and dogs to feed."

PHOTOGRAPH BY RICHARD FINN

SURVEYOR MAKES CHART FROM AIR



GUY H. BLANCHET

On 10 November, Mr. Blanchet wrote: "We made tea in the mountain-Indian fashion from a beehive-shaped bowl of green and dry willow. It was raw and hard to keep warm."

"We heard howling ahead -- wolves. Presently five appeared -- one very large black. Edward got his rifle and tried for the black. They scattered up the mountainside and another pack ahead also appeared. We caught up to Fred who was standing by his upturned tobaggan with an axe. He said fourteen had closed in on him, six blacks and eight yellow. The dogs had gone wild and the wolves howled when he shouted. Asked why he didn't shoot, he said, "Bad Medicine." He was very much a wild Indian and seemed to have been concerned only with his dogs. They said a wolf could always kill a dog. I wondered what would have happened if they had closed in from behind when I was far in the rear....

"Fred went ahead to look for a road. He does not know this part and has only information from a sketch by an old Indian."

By 18 November the Indian guides were again in country which they knew and they crossed the Continental Divide where a sharp transition in climatic conditions

THESE INDIAN GUIDES, TYPICALLY DRESSED, ACCOMPANIED BLANCHET ON HIS LONG TREK

PHOTOGRAPH BY RICHARD FINNIE

is evident.

On the Mackenzie side the mountains are cut by narrow valleys and have a light timber covering them, while on the Yukon side great valleys have been eroded in the course of centuries and are dark with forests.

On 26 November the weary group made Fred MacLennan's camp at Sheldon Lake, where Blanchet waited alone for five weeks for an airplane to rescue him.

A survey that summer had outlined the route from Whitehorse to Sheldon Lake.

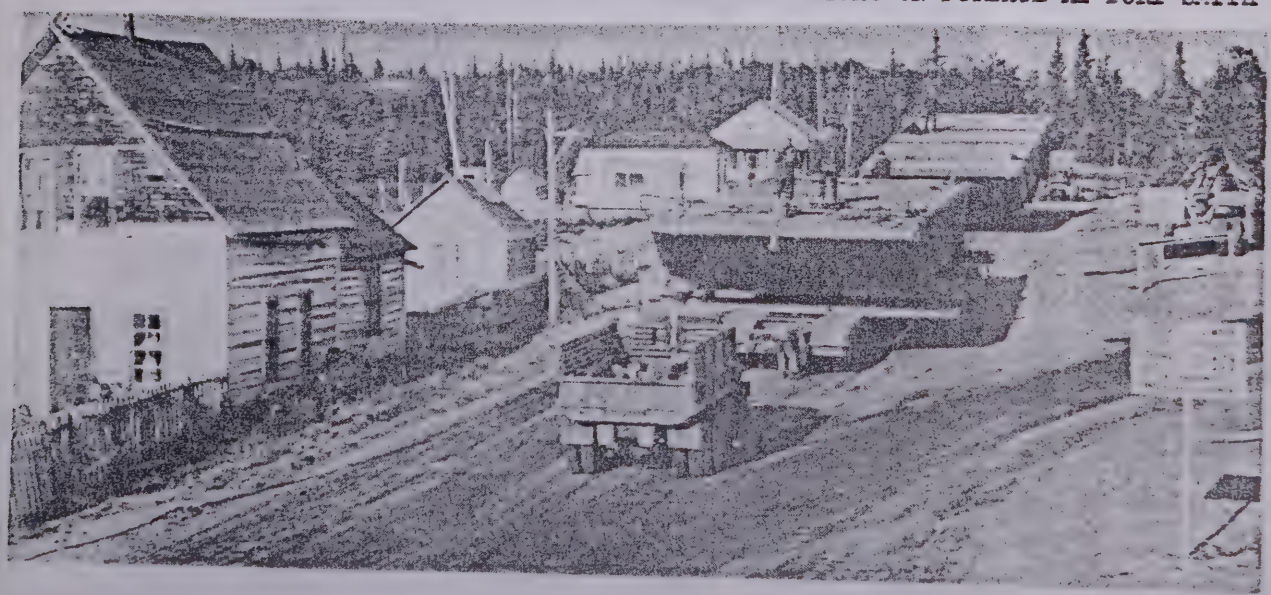
COLOR GUARDS INTENT AS GENERAL WORSHAM DEDICATES WHITEHORSE REFINERY

Symbolic is this picture of the close cooperation and friendly relations existing n this unprecedented project built by U. S. engineers and Canadian and U. S. con- ractors and their employes on Canadian soil. Shown are the RCAF color guard with he Royal Canadian Mounted Police in the center and the U. S. Army color guard on he other side of them. Few nations in the world can point with such pride as Can- da and the United States to their understanding of each other and their pitching in ogether in the Northwest to do a great job in a great land.

SCORES OF MILES OF ROADWAY IN THIS ARCTIC REGION HAD TO BE GIVEN EXTRA INSULATION

PHOTOGRAPH BY RICHARD FINNIE

ALONG THIS DUSTY HAUL PASSED THOUSANDS OF TONS OF FREIGHT ON PORTAGE AT FORT SMITH



PHOTOGRAPH BY RICHARD FINNIE

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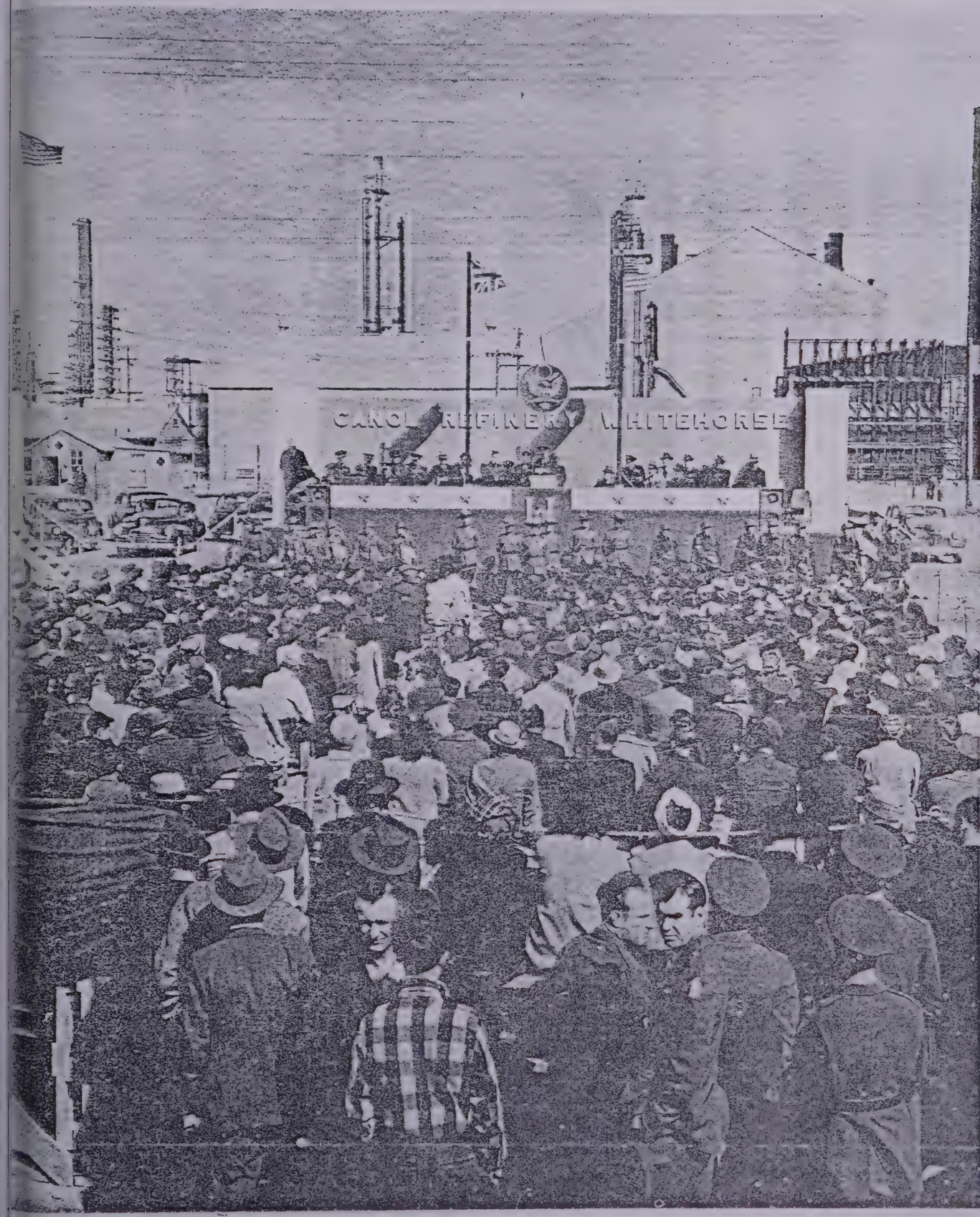
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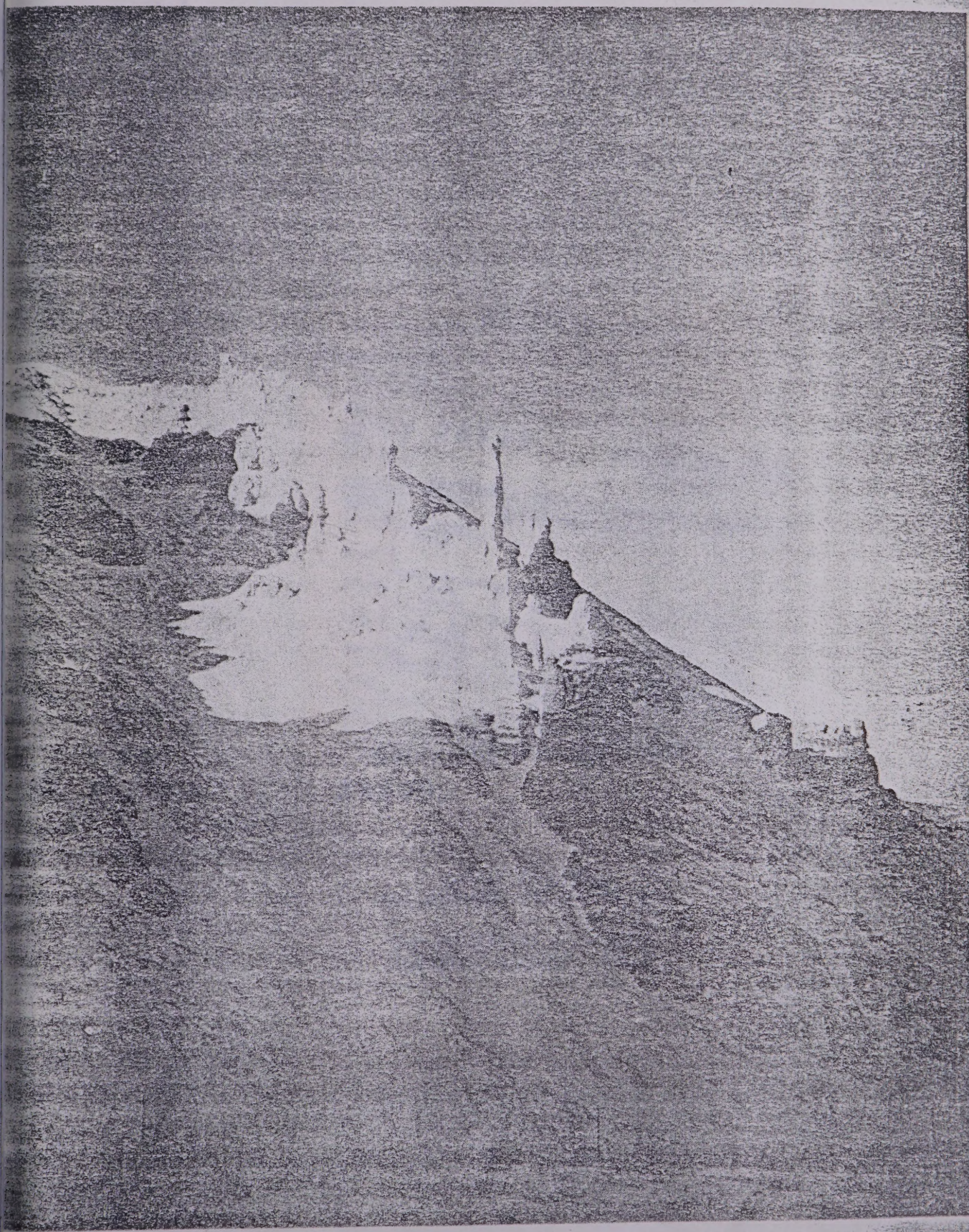

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